Space Weather Forecast

Issued on Wednesday, 10 July 2024 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (R1-R2; Minor-Moderate radio blackouts) throughout. Chance of G1/Minor Storm intervals days 3 & 4 (12-13 Jul).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Low with baseline and peak X-ray flux all contained within Common class over the past 24hrs. There are seven numbered and five as yet unnumbered regions on the disc. A region in the southeast is by far the largest and most complex region on the disc, showing a continued growth trend. A region in the far east is showing a slight growth trend in penumbral extent but appears relatively simple. There are four as yet unnumbered regions near the eastern limb, all of which appear simple, with the rest of the numbered and unnumbered regions on the disk also appearing small and magnetically simple.

A coronal mass ejection was spotted leaving the Sun near south centre disk around 10/0530 UTC, associated with a Common class flare, though this appears to be very slow and is unlikely to arrive at Earth. Therefore, no Earth-directed Coronal Mass Ejections have been observed during the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of background conditions. Speeds were slow-ambient. The Interplanetary Magnetic Field was weak. The north-south component varied weakly. The resulting geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: Solar radiation was measured at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at Low, with a chance of becoming Moderate, with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections feature in the forecast. The solar wind should start at slow-ambient levels, rising to Slightly Elevated or perhaps briefly Elevated speeds later on day 1 until early day 3 (10-12 Jul) due to negative polarity coronal hole high speeds streams. Day 3 or on day 4 (12-13 Jul) a further, likely faster and perhaps more impactful coronal hole high speed stream is expected to arrive bringing Elevated solar wind speeds.

Geomagnetic activity is expected to be mainly Quiet to Unsettled through the period. There is a Slight Chance of G1/Minor storm intervals days 1-2 (10-11 Jul), this then increasing to a Chance by days 3 and 4 (12-13 Jul) due to successive coronal hole fast wind enhancements.

Energetic Particles / Solar Radiation: Solar radiation storms are not expected, but there is a very slight chance of reaching S1/Minor Radiation Storm levels. This risk increases a little later in the period as a sunspot, currently in the southeast, rotates towards the southwest and into a more geoeffective position.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	30	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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